INTRODUCTION

This atlas presents data on ground-water quality for the Ely 1° x 2° quadrangle. The basic data were compiled as part of the Great Basin Regional Aquifer-Systems Analysis of the U.S. Geological Survey (Harrill and others, 1983).

The data herein were obtained from various sources, including published reports and computerized data files. The computer files accessed for this effort are: (1) WATSTORE, the National Water-Data Storage and Retrieval system maintained by the Water Resources Division of the U.S. Geological Survey; (2) WADS, a system created by the Desert Research Institute, University of Nevada; and (3) RASS, a system maintained by the Geologic Division of the U.S. Geological Survey. Other potential major sources of data are: the National Uranium Resource Evaluation (NURE), a U.S. Department of Energy project; reports of sampling efforts begun in 1980 by the U.S. Bureau of Land Management; and U.S. Geological Survey reports on various hydrographic areas. Only those analyses that pass certain quality-control criteria are included herein. A chemical analysis is excluded if (1) determinations do not exist for all of the principal ions, or (2) the analytical results do not meet the following criterion for electrical balance: total cations and total anions must agree within 10 percent, using the formula:

$$\text{imbalance (in percent)} = \frac{(\text{cations} - \text{anions})}{(\text{cations} + \text{anions})} \times 100 ,$$

where the concentrations are expressed in milliequivalents per liter. This electrical imbalance should be small for comprehensive analyses and it therefore serves as a check on the quality of the analytical results.

Where sample sites are closely spaced, or where more than one analysis is available for a single site, areal averaging is required to prevent overprinting of information on the map (see side 1). Furthermore, if data for a deep well or for a thermal water are available within an area containing other data (shallow or nonthermal), the other data are not included in the averaging. Finally, if data for both a deep well (1,000 feet or greater) and a thermal water (30°C or greater) are available, only the deep data are used. The averaging is done over a map area of 0.5 inch by 0.5 inch at a scale of 1:250,000, which is equivalent to about 4 square miles. One consequence of this procedure is that the actual map location corresponding to the sampling site does not necessarily coincide exactly with the computer-plotted location on the map (which is at the center of the 4-square-mile averaging area). Thus, the plotted data for springs may be offset from the spring locations shown on the topographic base map.

The general chemical character of each water (that is, the relative proportions of principal cations and anions) is shown in the trilinear diagrams (side 1) and indicated by a letter code on the map (see "Explanation"). The characteristics and uses of trilinear diagrams are discussed by Hem (1970, p. 264-270). Both the map and the trilinear diagrams use the same depth-and-temperature symbols. The bar graph (side 1) indicates the relative proportion of major cations and anions for the indicated ranges of dissolved-solids concentration.

REFERENCES CITED

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Hem, J. D., 1970, Study and interpretation of the chemical characteristics of natural water (2d ed.): U.S. Geological Survey Water-Supply Paper 1473, 363 p.

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CONVERSION FACTORS AND ABBREVIATIONS

"Inch-pound" units of measure used in this report may be converted to International-System (metric) units by using the following factors:

Multiply	*By*	*To obtain*
Feet (ft)	0.3048	Meters (m)
Inches (in.)	25.40	Millimeters (mm)
Square miles (mi^2)	2.590	Square kilometers (km^2)

For temperature, degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) by using the formula °F = [(1.8)(°C)] + 32.

Site designation[1]	Latitude, longitude (deg-min-sec)[2]	Type of site	Temperature (degrees Celsius)	pH (units)	Specific conductance (microsiemens per centimeter at 25°C)	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Carbonate	Sulfate	Chloride	Fluoride	Silica	Dissolved solids[3]	Cation-anion balance[4]	Sampling date (year-month-day)	Well depth (feet)	Source of data[5]
BIG LOUIE SPRING	390132	1150333	Spring	14	7.7	464	56	11	23	6.0	250	0	24	18	0.3	95	350	-2	68-09-12		Van Denburgh and Rush, 1974
PRESTON SEEDING WELL	390355	1155915	Well	16.5	8.2	425	56	19	5.0	1.0	250	0	18	9.0	0.4	12	240	-1	75-07-31		Bateman, 1976
L.A.P.&W. SPRING V. NO 1	390754	1143030	Well	15.5	8.0	290	37	13	4.7	1.1	180	0	< 5.0	2.1	0.1	16	170	0	82-09-16	580	WATSTORE
MURRY SPRING	391345	1145355	Spring	12.5	7.7	360	46	18	3.6	0.7	220	0	11	2.6	0.1	8.9	200	0	83-06-14		WATSTORE
N16 E54 20B	391456	1155512	Well	11	7.5	313	31	4.7	24	7.0	150	0	22	7.5	0.1	48	220	0	67-05-10		WATSTORE
EAST ELY	391609	1145146	Well	12	7.7	388	37	21	12	4.3	170	0	15	20	0.1	38	230	7	83-07-06	260	WATSTORE
MCGILL SPRING	392431	1144643	Spring	18	7.3	650	73	27	18	4.1	200	0	140	17	0.2	19	400	1	78-08-24		WATSTORE
MCGILL SPRING	392731	1143828	Spring	26	6.8	380	51	16	8.2	2.3	220	0	19	3.2	0.2	21	230	2	81-07-15		WATSTORE
DEMING WELL	392847	1145136	Well	14	8.1	410	23	14	27	8.3	180	2	8.0	1.6	0.3	58	230	7	83-07-26	260	WATSTORE
FAD SHAFT	393019	1155905	Spring	—	7.8	467	52	26	8.3	1.4	240	0	38	10		11	260	1	53-01-21		Eakin, 1962
N16 E54 20B	393030	1155730	Well	8.5	—	489	64	17	12	3.3	230	0	56	9.8	0.2	33	310	0	67-05-09		WATSTORE
FAD SHAFT	393107	1155931	Mine	14	7.8	467	52	26	8.3	1.4	240	0	38	10		11	260	1	53-01-21		Harrill, 1968
CAMPBELL-STEPTOE SOS-AMS	393212	1145450	Spring	24	7.0	420	52	20	9.3	3.6	260	0	19	4.1	0.3	19	260	0	81-07-15		WATSTORE
STEPTOE WARM SPRING	393219	1145452	Spring	24	7.3	470	51	21	9.3	3.4	250	0	18	4.4	0.4	19	250	2	78-08-25		WATSTORE
THIRTY MILE SPRING	393320	1151305	Spring	8.5	8.0	230	29	4.6	13	2.8	140	0	7.9	5.5	0.2	43	180	-3	83-08-23		WATSTORE
N20 E53 23A	393710	1155840	Well	—	7.6	368	50	8.9	16	2.6	210	0	11	7.5	0.2	27	230	1	67-08-05		WATSTORE
N20 E53 02C	393720	1155850	Well	—	7.6	369	47	9.8	15	2.4	190	0	17	11	0.2	29	220	1	67-08-05		WATSTORE
N21 E53 35C	393814	1155657	Well	—	7.7	469	66	14	14	1.2	210	0	50	13	0.1	17	280	2	67-08-05		WATSTORE
NOT SPECIFIED	393933	1144817	Spring	78	7.9	540	69	20	18	8.6	310	0	27	3.6	1.4	49	350	3	77-05-16		WATSTORE
NOT SPECIFIED	393933	1144817	Spring	78	6.7	560	69	19	16	5.6	310	0	23	3.2	1.1	49	340	2	78-08-26		WATSTORE
NOT SPECIFIED	394502	1155234	Well	—	7.4	709	78	36	27	5.5	360	0	77	16	0.6	37	450	2	54-03-10		Eakin, 1962
SHELBOURNE SPRINGS	394714	1144117	Spring	24.6	8.3	420	56	17	4.3	1.4	230	0	19	3.6	0.2	23	240	1	80-05		Ghusn, 1981
GEOCOECHEA, SIMONSEN SPRINGS	394847	1153630	Spring	22.6	8.6	472	42	20	18	6.7	220	6.5	35	6.7	0.3	20	260	0	80-05		Ghusn, 1981
SCHELLBORNE PASS WELL	394949	1143318	Well	28.2	8.0	330	26	8.7	20	9.5	130	0	9.0	21	0.4	71	230	4	83-07-27		WATSTORE
L.A.P.&W. STEPTOE NO. 1	395116	1144513	Well	18.4	7.5	380	49	10	16	4.4	210	0	18	5.1	0.6	58	260	1	82-09-16	490	WATSTORE
THOMPSON RANCH SPRING	395415	1155243	Spring	21	6.9	555	69	22	21	4.6	320	0	53	6.9	0.4	21	360	-2	81-07-14		WATSTORE

[1] Sample-site designations having format N14 E50 04C indicate township, range, and section, respectively; letter following section number indicates quarter section, as follows: A, northeast; B, northwest; C, southwest; D, southeast. Townships and ranges are referenced to Mount Diablo base line and meridian.

[2] Data are listed in order of increasing latitude and, for identical latitudes, increasing longitude.

[3] Computed sum (with bicarbonate multiplied by 0.492 to make results comparable with residue-on-evaporation values).

[4] Computed as described in introductory text. Negative value indicates that anions exceed cations.

[5] WATSTORE is U.S. Geological Survey's National Water Data Storage and Retrieval System. Citations for other sources are listed under "References Cited."